REMARKS/ARGUMENTS

The Office Action mailed November 13, 2008 has been received and the Examiner's

comments carefully reviewed. Claims 1-24 are rejected. Claims 1, 5-8, 10, 12-13, and 18-19

have been amended. The Applicants present the following for consideration.

Claim Rejections Under 35 U.S.C. 101

Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to

non-statutory subject matter. The Office Action recites:

> As per Gottschalk v. Benson, 409 U.S. 63, 71-72, 175 USPQ 673, 676 (1972) the claims
> must result *in a physical transformation* or *provide a "particular machine" for
> execution*. The claims do not meet either of these criteria since they provide no physical
> transformation and the claimed process is performed on a general purpose computer
> rather than a "particular machine."

Office Action, pgs. 4-5. Applicants respectfully disagree that the "server" recited in Claim 1 is

not a "particular machine." However, the claims have been amended, without disclaimer, to

expedite prosecution. Claim 1 now includes a *"physical transformation"* and a *"particular*

machine." For example, as amended, Claim 1 recites in part a *"server computing device*

configured for dynamic allocation of buffer memory on the server." Applicants respectfully

submit that such a device is a "particular machine." Additionally, as amended, Claim 1 recites

in part a *"server storing* server-side information for each connection, the server-side

information including . . . ."* Applicants respectfully submit that storing information is a

physical transformation. For example, computer-readable storage medium is "physically

transformed" from holding a "1" to holding a "0" (or vice versa) when information is stored on

the medium. Accordingly, Applicants respectfully request the rejections be withdrawn.

Regarding the specification, paragraph 18, Applicants respectfully submit that

"computer-readable storage medium" does not encompass a "modulated data signal."

According to the specification, a "***communication media***" includes a "modulated data signal."

Claim 1 does not recite a "communication media." Applicants respectfully request the

rejections be withdrawn.

For similar reasons presented above, Applicants respectfully request the rejections be

withdrawn for claims 1, 13, 18, 19 and corresponding dependent claims.

Claim Rejections Under 35 U.S.C. 112

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. The Applicants have amended the claims to address

the rejection without disclaimer and respectfully request the rejections be withdrawn.

Claim Rejections Under 35 U.S.C. 103

Claim(s) 1-3, and 5-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Forecast et al. "Dynamic Modeling for Resource Allocation in a File Server", U.S. Patent No.

6,230,200, hereafter referred to as Forecast, in view of Ballard "Client-Side Load-Balancing in

Client Server Network", U.S. Patent No. 6,078,960, hereafter referred to as Ballard. Claim(s) 4

is rejected under 35 U.S.C. 103(a) as being unpatentable over Forecast in view of Ballard further

in view of in view of Haugseth et al. "Computer Network Controller", U.S. Patent No.

6,856,619, hereafter referred to as Haugseth. The Applicants respectfully disagree but have

amended the claims, without disclaimer, to more clearly define the invention.

As amended, Claim 1 recites in part:

- . . . receiving information from a client computing device at a server component on a server computing device, the server computing device configured for dynamic allocation of buffer memory on the server, the buffer memory on the server to be allocated to clients for file system transactions, wherein the information indicates the client needs additional resources to perform a transaction and the information

received from the client includes a number of transactions that are currently pending on the client that exceed a maximum number of transactions available limit that was previously negotiated;

- determining by the server component if allocating to the client the additional buffer memory on the server puts the server component in a resource constrained situation, wherein the server component is determined to be in a resource constrained situation by comparing a total number of transactions in use for all connections to the server and a total number of pending requests for all connections to the server with a maximum number of transactions available on the server;

- in response to determining that allocating to the client the additional resources puts the server component in the resource constrained situation:

  o determining resources currently allocated to a plurality of existing clients; wherein the server component stores server-side information related to each client connection with each of the clients, the server storing server-side information for each connection, the server-side information including:

    ▪ a current number of outstanding transaction requests from the client;

    ▪ the maximum number of transactions available limit for the client;

    ▪ the number of transactions that are currently pending on the client that exceed the maximum number of transactions available limit for the client, wherein the maximum number of transactions available limit for the client is initially determined when each of the clients connects to the server at which point a negotiation is performed between the client and the server to establish the maximum number of transactions; wherein the maximum number of transactions specifies a number of transaction requests to be accepted by the server from the client;

  o issuing rebalancing messages by a Light Weight Input/Output (LWIO) protocol configured for distributed file systems to any affected clients to either reduce or increase their maximum transaction available limit, wherein the rebalancing messages to the affected clients comprise deltas, each delta specifying a change in the maximum number of transactions available to the corresponding affected client.

In contrast, the cited references do not teach dynamic allocation of buffer memory for

file system transactions, comparing a total number of transactions other data, storing

information related to the transactions on the server, and issuing messages by Light Weight

Input/Output (LWIO) protocol used for distributed file systems.

Forecast and Ballard do not teach dynamic allocation of buffer memory to clients for

file system transactions. The Office Action mapped the dynamic allocation of resources to

Forecast. For example, Forecast discloses:

> The allocation balancing routine can be invoked as a periodic background task or when
> an imbalance condition is detected or would occur as a result of allocation or de-
> allocation. For example, an imbalance condition could result from allocating or de-
> allocating an amount of resources substantially large in comparison to the resources
> provided by a single component.

Forecast, Col. 3:14-20. Forecast models certain resources and the effect of failure of those

resources. For example, Forecast models the effect of *component failure* in a network.

(Forecast, Abstract.) Forecast, however, does not model or disclose the allocation of *buffer*

memory on the server to be allocated to clients for file system transactions. Ballard does not

cure the deficiencies of Forecast. Ballard is directed towards client side load balancing.

Specifically, Ballard focuses on tasks that may be "load balanced" to clients (i.e. processes to

be executed on clients.) Ballard depicts *requests* to be distributed to different *servers* (12):

FIG.1
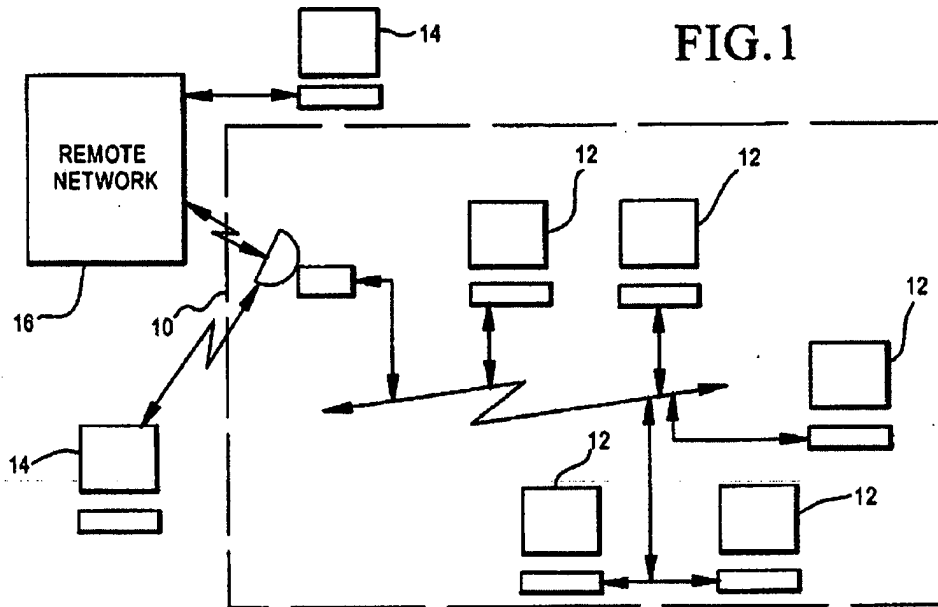
Ballard, Fig. 2. In Ballard, requests from clients are load balanced to different servers. For

example, Ballard states:

> Multiple servers are coupled to the hardware load balancing device. *A request from a client computer is routed to one of such servers through the load balancing device*. In effect the server computers coupled to the load balancing device have the same address.

Ballard, Col. 5:27-30. In contrast to allocating a server to service a client request, Figure 2 of

the present application depicts *memory of a server (210) being allocated* for use by clients:
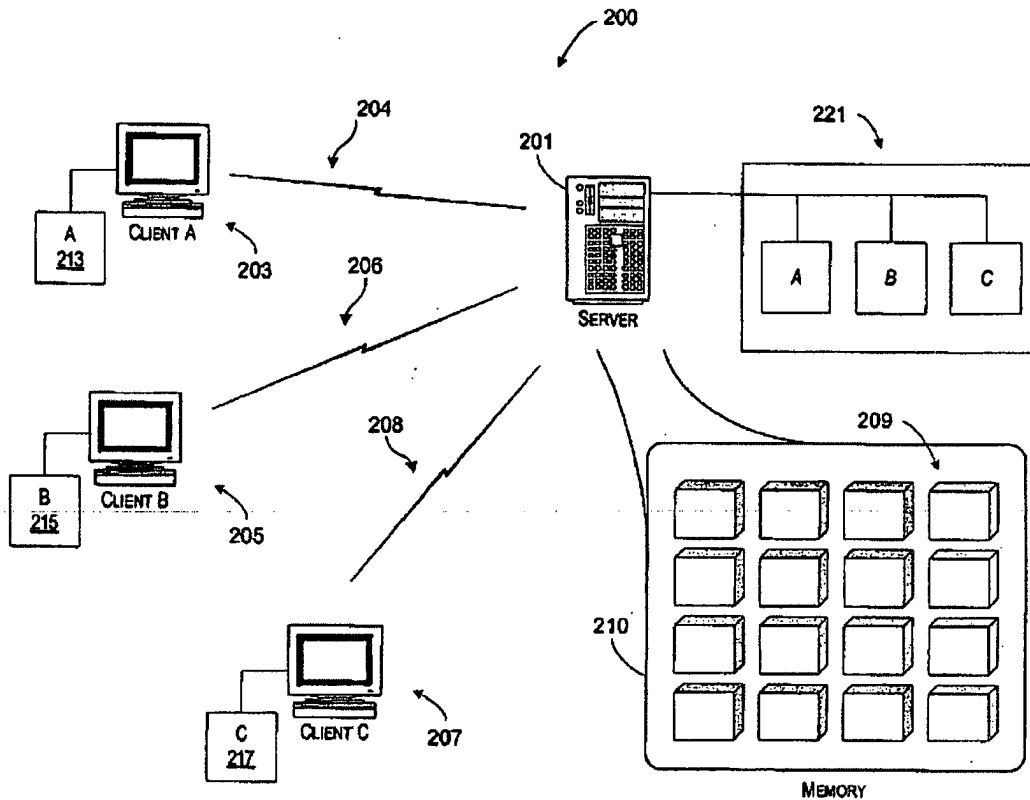
Present Application, Figure 2; see also pg. 5. Accordingly, Forecast's generalized allocation of resources, such as allowance for component failure, and Ballard's load balancing of the servers to service a client request are not equivalent to a server computing device configured for dynamic allocation of buffer memory on the server, the buffer memory on the server to be allocated to clients for file system transactions.

Additionally, the cited references do not determine a server to be resource constrained by comparing a total number of transactions in use for all connections to the server and a total number of pending requests for all connections to the server with a maximum number of transactions available on the server. In rejecting now-amended claims 5-7, the Office Action mapped the comparison to Forecast's allocation balancing routine. Specifically, Forecast

states:

> The allocation balancing routine can be invoked as a periodic background task or when an imbalance condition is detected or would occur as a result of allocation or de-allocation. ***For example, an imbalance condition could result from allocating or de-allocating an amount of resources substantially large in comparison to the resources provided by a single component.***

Forecast, Col. 3:14-20. Forecast discloses an "imbalance condition" and Forecast observes that this may arise when "an amount of resources substantially large" is allocated. Nonetheless, Forecast does not go into further detail about how the "imbalance condition" should be determined. More specifically, Forecast does not compare "a total number of transactions in use for all connections to the server" and "a total number of pending requests for all connections to the server" with "a maximum number of transactions available on the server." For example, Forecast does not disclose "pending requests" to a server. Forecast does not contemplate a client informing a server of the number of pending requests, so Forecast cannot determine a total number of pending requests for all connections to the server. Even if Forecast did disclose a number of pending requests (which it does not), Forecast does not compare the number of pending requests and the number of transactions in use with the maximum number of transactions available on the server. Accordingly, Forecast's disclosure of an "imbalance condition" does not encompass comparing a total number of transactions in use for all connections to the server and a total number of pending requests for all connections to the server with a maximum number of transactions available on the server.

Further, the cited references do not disclose storing information on the server including a current number of outstanding transaction requests from the client, the maximum number of transactions available limit for the client; and the number of transactions that are currently

pending on the client that exceed the maximum number of transactions available limit for the

client. For example, as previously described, Forecast does not store request information

regarding the number of transactions that are currently pending *on a client*. Similarly, Ballard

does not store the request information on the server. In fact, a central theme in Ballard appears

to be that information is *maintained on the client*:

> The *client computer's list* then is updated when the list is received during subsequent
> access. In the event a client computer determines that a server is non-responsive, such
> server is removed from the *load balance list for the client computer* which made such
> determination.

Ballard, Abstract. As importantly, Ballard does not disclose storing a current number of

outstanding transaction requests from the client, the maximum number of transactions available

limit for the client; and the number of transactions that are currently pending on the client that

exceed the maximum number of transactions available limit for the client. Fig. 4A of Ballard

shows that Ballard maintains a list of servers with a load expressed as a percentage adjacent to
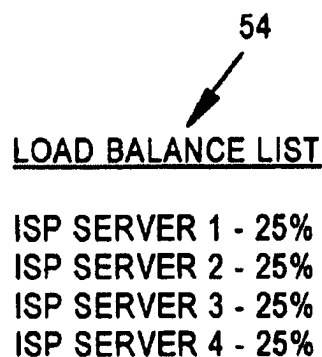
each server:

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LOAD BALANCE LIST

ISP SERVER 1 - 25%   **FIG.4A**
ISP SERVER 2 - 25%
ISP SERVER 3 - 25%
ISP SERVER 4 - 25%

Ballard, Figure 4A. Ballard's lists of servers with server load percentages cannot be equivalent

to storing, on a server, numbers related to transaction requests by clients.

In addition, the cited references do not teach issuing rebalancing messages by Light

Weight Input/Output (LWIO) protocol used for distributed file systems, wherein the rebalancing

messages comprise deltas, each delta specifying a change in the maximum number of

transactions available to the corresponding affected client. Forecast and Ballard do not disclose

an LWIO protocol. (Office Action, pg. 17.) The Office Action mapped LWIO to Haugseth.

Applicants respectfully disagree that Haugseth teaches LWIO. Haugseth does not mention

"LWIO." More importantly, Haugseth is describing a network controller for forwarding network

packets:

> Thus, in the most general embodiment of a first aspect of the present invention, there is
> provided a general *computer network controller*, preferably operative in a System Area
> Network, which network controller includes a data buffer handling payload as well as a
> dedicated, programmable micro sequencer handling control flow and being capable of
> running different *network packets and protocols, being packet format independent and
> network independent.*

Haugseth, Col. 2:9-16. Because Haugseth is directed towards a network controller, Haugseth's

protocol is not directed towards use for distributed file systems. Even if Haugseth's network

packet protocol is considered a LWIO protocol, however, Haugseth does not disclose LWIO

messages comprising deltas, each delta specifying a change in the maximum number of

transactions available to the corresponding affected client. Haugseth's messages are dedicated to

"control flow" and do not contain any detail about a change in the maximum number of

transactions available to an affected client. Accordingly, Haugseth's network packet control

protocol does not encompass an LWIO protocol with messages including a change in the

maximum number of transactions available to an affected client.

For at least the reasons presented above, Claim 1 is proposed to be allowable. Claims 2-

11 are proposed to be allowable as they depend from a valid base claim.

As amended, Claim 13 recites in part:

- a plurality of data stores, each data store being associated with a different client connection to a server computing device, wherein the server computing device is configured for dynamic allocation of buffer memory on the server, each data store including: . . .

- receiving a transaction request message on the server computing device from the client; wherein the transaction request message received from the client includes the number of transactions that are pending due to an unavailability of sufficient resources to handle the transactions that was previously negotiated; wherein the number of resources available to the client that are stored in the credit limit field is a maximum number of transactions available to the client that is initially determined when the client connects to the server at which point a negotiation is performed between the client and the server to establish the maximum number of transactions; and wherein the server rebalances resources when the transaction request places the server in a resource constrained situation; and

- sending rebalancing messages by a Light Weight Input/Output (LWIO) protocol used for distributed file systems to any affected clients to either reduce or increase their maximum transaction available limit.

For at least the reasons presented above, Claim 13 is proposed to be allowable. Claims

14-17 are proposed to be allowable as they depend from a valid base claim.

As amended, Claim 18 recites in part:

- . . . a server component, the server component configured for dynamic allocation of buffer memory on a server computing device, the server component configured to:

- receive information from a client that indicates the client needs additional buffer memory on the server to perform a transaction; . . . wherein the messages indicate to either reduce or increase each of the affected clients number of transactions, the messages comprising deltas specifying changes in the maximum number of transactions; . . . .

For at least the reasons presented above, Claim 18 is proposed to be allowable.

As amended, Claim 19 recites in part:

- . . . computing a total number of client connections, each client connection being associated with a client connected to a server, each client having a credit limit that identifies a number of resources that are allocated to the client; wherein the number of

resources that are available to the client is initially determined when the client connects to the server at which point a negotiation is performed between the client and the server to the number of resources; wherein the client maintains information about the state of its allocated resources including a current number of outstanding credits used and a maximum number of credits available; . . .

- . . . issuing messages by a Light Weight Input/Output (LWIO) protocol configured for distributed file systems to affected clients indicating to either reduce or increase their negotiated number of resources.

For at least the reasons presented above, Claim 19 is proposed to be allowable. Claims 20-24 are proposed to be allowable as they depend from a valid base claim.

Conclusion

In view of the foregoing amendments and remarks, all pending claims are believed to be allowable and the application is in condition for allowance. Therefore, a Notice of Allowance is respectfully requested. Should the Examiner have any further issues regarding this application, the Examiner is requested to contact the undersigned attorney for the applicant at the telephone number provided below.

Respectfully submitted,

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